

New Product

"MW" Diesel Fuel Injection Pump

Archiv VDT

VDT-BEP 102/1 B
< VDT-I-403/1 B >
Edition 8.1974
Translation of
German edition
of 10.7.1974

EP
40

A new Bosch diesel fuel injection pump, the "MW", is being fitted, together with the "RW" mechanical governor, in the new Daimler-Benz vehicle with a 5-cylinder engine (OM 617).

The fuel injection system consists of the following major components:

Fuel injection pump:	PES 5 MW 55/320 RS 3 PES 5 MW .. RS 4 USA model (green nameplate) MW = pump size M, heavy-duty
Mechanical governor:	RW 350/2200 MW 2 RW = governor with tensioning lever MW = governor for pump size "MW"
Supply pump:	FP/K 22 MW 3 MW = supply pump for pump size "MW"

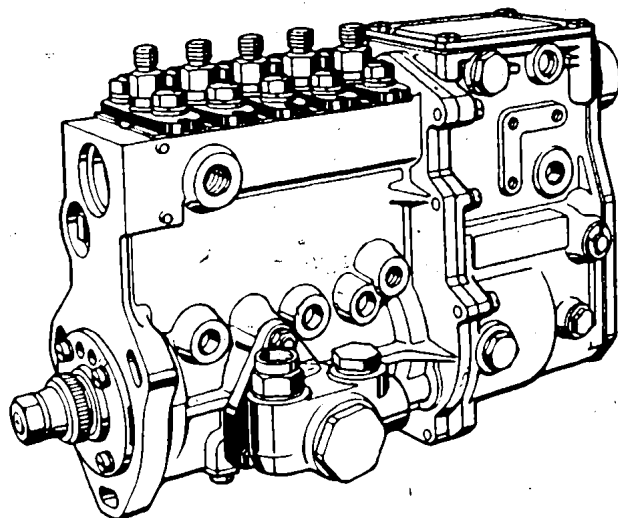


Fig. 1

Construction and Operation

1. Fuel injection pump

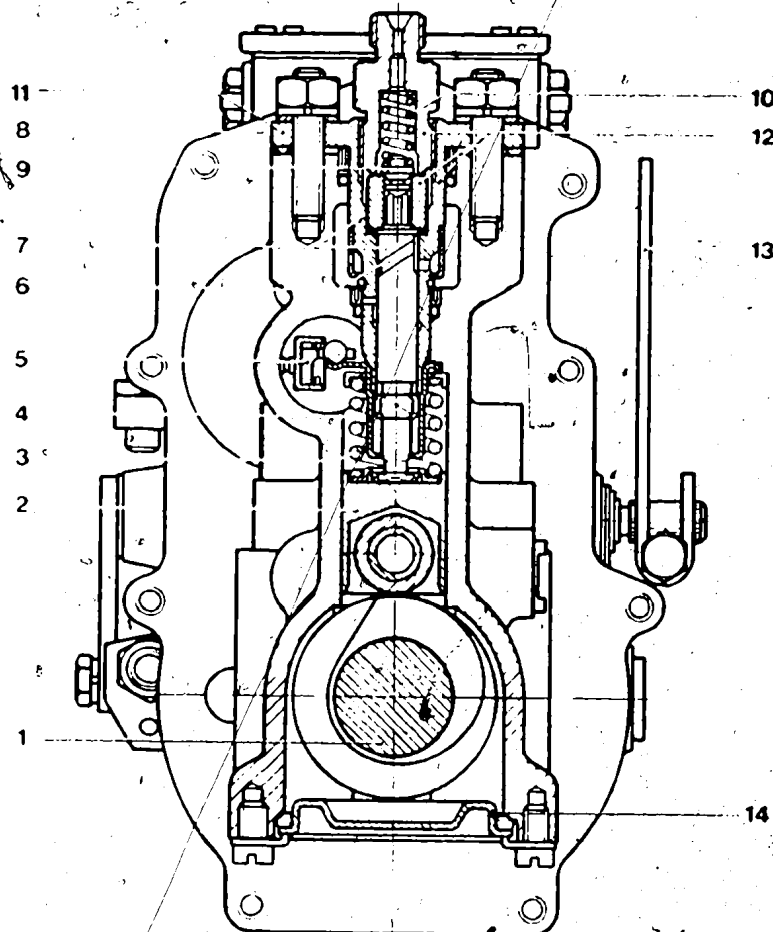
The delivery and metering of the fuel ensues according to the familiar working methods of Bosch fuel injection pumps.

The special characteristics and properties of this fuel injection pump are:

- Temperature-resistant, pre-assembled barrel and valve assembly as an independent subassembly.
- Closed die-cast stress-free housing, with base cover.
- The basic adjustment to the fuel delivery is made externally by turning the barrel and valve assembly, and that of the port closing by placing spacers under the holding flange of the barrel and valve assembly.
- Control rod with ball linkage, non-chip metal formed.
- Stiffer camshaft, torsion-proof and resistant to bending. Makes possible high injection pressure and short duration of injection.
- No adjustment of the axial play of the camshaft necessary.
- Maintenance-free through connection to engine lubrication system.
- Choice of mounting position of partly integrated automatic timing device.

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Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH



Notes to Fig. 2

- 1 = Camshaft
- 2 = Roller tappet
- 3 = Helical compression spring
- 4 = Control sleeve
- 5 = Control rod
- 6 = Control edge
- 7 = Plunger and barrel assembly
- 8 = Adjusting plate
- 9 = Delivery valve assembly
- 10 = Delivery valve spring
- 11 = Holding flange
- 12 = Barrel and valve assembly
- 13 = Control lever
- 14 = Cover

Fig. 2

2. Mechanical governor

The "RW" mechanical governor is a maximum-minimum governor. It can also be produced as variable speed governor type "RWV" for other vehicles.

The special characteristics and properties of this governor are:

- All adjustments can be easily undertaken after removal of the governor end-cover.
- Pneumatic shut-off device controlled by switch in steering column. (Vacuum pump — control valve in steering column switch — pneumatic shut-off device).
- Speed-dependent, mechanical regulation of starting fuel delivery.
- Various possibilities on the upper side of the governor for fitting ancillary devices for characteristic curve correction. (Altitude compensation, manifold pressure compensation, temperature compensation).
- The governor is very powerful and this results in a high degree of regulating accuracy.
- Non-chip metal formed governor parts.
- Flyweight assembly damped against vibration.
- Control lever only needs to exert very low adjusting forces.

Notes to Fig. 3

- ① = Speed droop adjustment
- ② = Nominal speed adjustment
- ③ = Idle adjustment
- ④ = Full-load adjustment for RWV
- 5 = Driver
- 6 = Fulcrum lever
- 7 = Linkage lever
- 8 = Follower lever
- 9 = Control rod
- 10 = Linkage point
- 11 = Helical compression spring
- 12 = Sliding sleeve
- 13 = Swivel lever
- 14 = Drive plate
- 15 = Needle roller bearing
- 16 = Flyweight
- 17 = Rubber cushion
- 18 = Leaf spring
- 19 = Bell crank
- 20 = Governor spring
- 21 = Adjusting shaft
- 22 = Control lever
- 23 = Edge cam for RWV
- 24 = Idle auxiliary spring
- 25 = Tensioning lever
- 26 = Driver screw for RWV
- 27 = Spring retainer for RW
- 28 = Pneumatic shut-off device

Construction of the "RW" Mechanical Governor

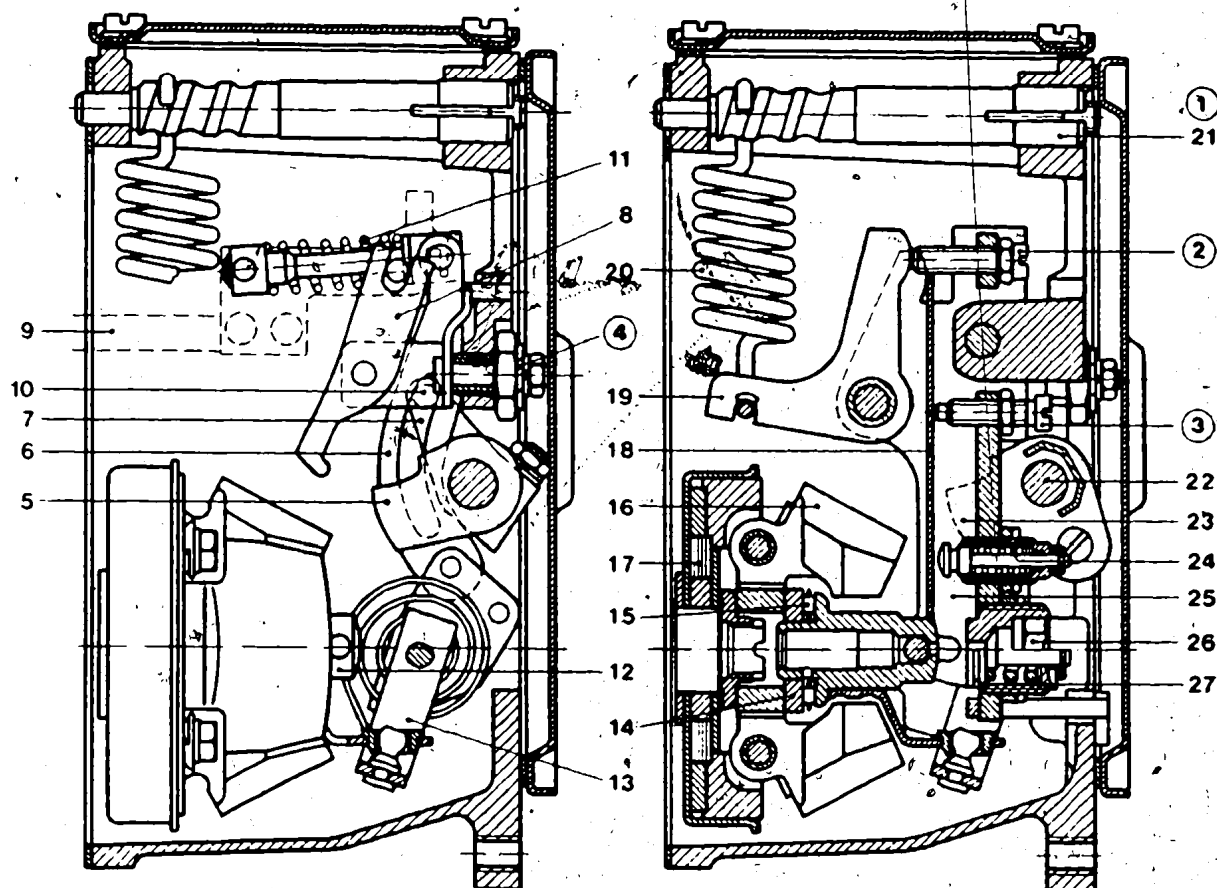


Fig. 3

The flyweight assembly is fastened on the camshaft of the fuel injection pump together with a vibration damper.

When the 4 flyweights 16 swing outwards they push the sliding sleeve axially via a drive plate 14 and needle roller bearing 15.

The tensioning lever 25 is swivel-mounted on a bolt in the housing. It carries an adjustable bell crank 19, to which is attached the governor spring 20, with which the nominal speed can be adjusted ①. The upper loop of the governor spring is looped over the adjusting shaft 21 and serves to adjust the speed droop ①. Apart from this, an adjustable leaf spring 18 and an idle auxiliary spring 24 are mounted on the tensioning lever 25 to adjust the idle speed ②. Idle adjustment does not influence the nominal speed.

The movement of the sleeve is transferred to the fulcrum lever 6 and the control rod 9 of the fuel injection pump via the swivel lever 13 mounted in the housing. The

linkage lever 7, which is fixed to the external control lever 22, fits in the slit in fulcrum lever 6. During acceleration the lever advantage of linkage lever 13 to control rod 9 alters via control lever 22 and linkage point 10 of the linkage lever 7. Between the idle and maximum speeds the position of the control rod and hence the quantity of fuel injected can be directly selected by the control lever 22. Full-load delivery is adjusted by means of the external stop of the control lever 22.

Regulation of the starting fuel delivery is speed-dependent.

Starting fuel delivery is only possible below idle speed and takes place when the follower lever engages with the driver 5.

A spring retainer 27 in the tensioning lever 25 ensures fuel quantity compensation.

Diagrammatic view of RW Mechanical Governor

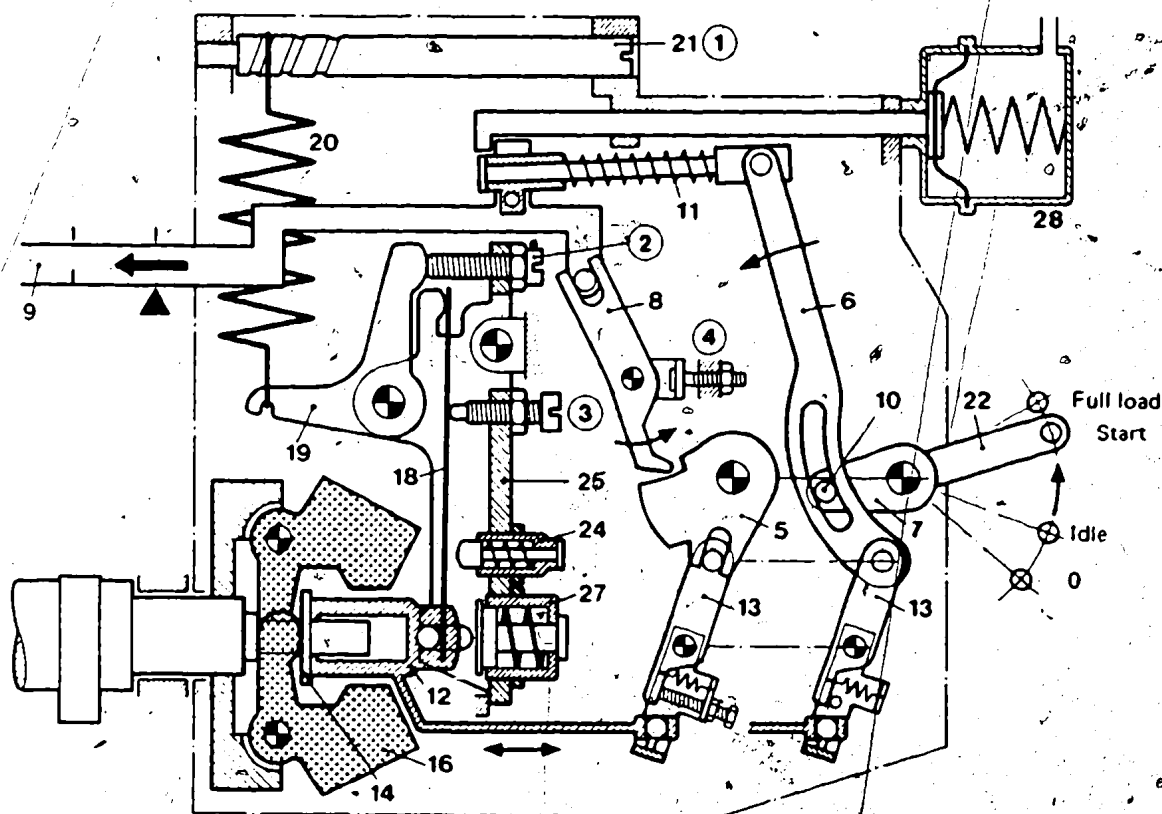


Fig. 4 Starting position

Notes to Fig. 4

- ① = Speed droop adjustment
- ② = Nominal speed adjustment
- ③ = Idle adjustment
- ④ = Full-load adjustment for RWV
- 5 = Driver
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- 14 = Drive plate
- 16 = Flyweight
- 18 = Leaf spring
- 19 = Bell crank
- 20 = Governor spring
- 21 = Adjusting shaft
- 22 = Control lever
- 24 = Idle auxiliary spring
- 25 = Tensioning lever
- 27 = Spring retainer for RW ...
- Driver screw for RWV (not shown)
- 28 = Pneumatic shut-off device

The difference between the RWV and RW governors is that on the RWV-type the linkage point 10 on the linkage lever 7 is controlled by a special torque cam.

When accelerating or pushing the control lever forwards, the control rod is at once pushed in the "more fuel" direction, until follower lever 8 contacts the edge cam 23 (full-load stop). When the control lever or linkage lever 7 is pushed further forward then the helical compression spring 11 is compressed. As speed increases, the compression on the spring decreases. When the desired speed is attained, then the control rod is pulled back and effects speed regulation.

Fuel quantity compensation is effected not by means of the spring retainer 27 but through the curve on the (speed-dependent) edge cam, which is sensed by the follower lever 8.

After-Sales Service Note:

After-sales service follows normal lines for this series of pumps and governors. Technical workshop documentation as well as testing and repair tools will be placed at your disposal.

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